

# Otter Population Analyses 2006

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## **Abstract**

Estimates of Wisconsin's otter population declined approximately 20% from about 15,600 animals in 1996 to 12,500 in fall, 2003. The WDNR Furbearer Advisory Committee recommended a harvest goal of 1,400 otters for the 2006-07 trapping season which should allow for slight increase in the population. Otter track detection rates on aerial surveys in 2006 were lower than in any prior year of the survey but may have been affected by poor snow and ice conditions.

## **Introduction**

Kohn and Ashbrenner (1984) described earlier attempts to obtain age and reproductive data for Wisconsin otters via carcass collections. They also tested an aerial survey to estimate otter population trends, and attempted to estimate the statewide population and allowable harvests. This report summarizes and compares data collected since then, and discusses future data collections necessary to continue and refine Wisconsin's otter monitoring and harvest management capabilities.

## **Methods**

Wisconsin trappers are required to register their otters with the DNR. The area of kill (county and deer management unit), date of kill, sex of the animal, type of trap used, and the name and address of the trapper were recorded for each animal registered.

Trappers were also required to periodically turn in their otter carcasses. Carcass collections were conducted in 1979-82, 1994-95, 1998-99, and 2001-02. A canine tooth was extracted from each carcass and all teeth were x-rayed. Kits were identified by the presence of an open foramen and wide pulp cavity ( $\geq$  half the tooth width) (Kuehn and Berg 1983). Teeth from otters  $\geq 1$  year were sent to Matson's Laboratory, Milltown, MT for processing and aging by counting annuli in the cementum. Ovaries were removed from all female carcasses and stored in 10% formalin until they were firm enough to hand section. The sections were then examined for presence of corpora lutea. These data were incorporated into the Minnesota Furbearer Population Model to obtain statewide otter population estimates and trends.

Development of an aerial survey to estimate regional otter population trends began in February 2001. The aerial survey involved recording the presence or absence of otter tracks at stream and river crossings along 30-mile long transects within each Otter Management Zone (Figs. 1 and 2). The transects selected had  $\geq 8$  stream crossings in each to provide adequate sample sizes, and were located to provide an even distribution within each Management Zone. GPS locations for the western and eastern end points of each transect were established to insure that the same transects were surveyed each year. Twenty-three permanent transects were established in each Otter Management Zone.

Transects were surveyed from Cessna 172 and 182 aircraft using 2 observers plus the pilot. Surveys were conducted between 9am and 3pm on bright, sunny days 1-5 days after a significant ( $>2"$ ) snowfall. The date, days since snow, cloud cover, and observers names were recorded when each transect was surveyed. At each stream/river crossing, the pilot circled the

plane as low as necessary to thoroughly search for otter tracks. The presence or absence of otter tracks, and ice conditions were recorded at each crossing.

Based on analysis of the data collected during 2001-03, Kohn and Roth (2003) recommended that the aerial survey be adopted as an operational field survey. The Wisconsin Trappers Association donated funding for survey flights in 2004, 2005 and 2006. Wildlife Management personnel were trained in survey procedures during 2004.

## **Results**

### **Age structure and reproductive rates**

Age data has been obtained from 2,111 male and 1,552 female otters harvested to date (Tables 1 and 2). Age distributions were similar between sexes. Kits comprised approximately 45% of the harvest, yearlings about 22%, and adults approximately 33%. The mean age for both male and female otters harvested was 2.3 years. The age structure in the harvest was very similar in all 5 collections.

Ovaries and uterine horns were collected and examined from 747 otters since 1979 (Table 3). Pregnancy rates (based on *corpora lutea*) averaged 32% for yearlings and 75% for adults. Average litter sizes were 1.7 for yearlings and 2.2 for adults. The mean number of embryos per adult female was 2.3.

Mean litter sizes for yearling and adult otters, and adult pregnancy rates have remained relatively stable since otter carcass collections began in 1979. But, it appears that yearling pregnancy rates may have increased recently. Yearling pregnancy rates of otters collected during 1979-95 were about 10% as compared to yearling pregnancy rates of about 45% for those collected during the 1998-99 and 2001-02 trapping seasons. The more recent yearling pregnancy rates may be used to update our otter population model.

Analysis of regional differences in reproductive rates and harvest sex and age composition conducted in 2004 suggest that region specific data will be needed for development of zone specific population models. The lower yearling pregnancy rates in the Central and South zones and lower percentage of juvenile males in the harvest in the South Zone suggest that there may be regional differences in habitat quality or prey availability that may be affecting the productivity of regional populations and should be considered in future refinements of harvest management strategies.

### **Population Estimates**

Population estimates calculated by the computer model suggested that the statewide otter population increased rather steadily from approximately 12,600 animals in 1982 to 15,800 in 1994, and then declined down to 12,500 otters in 2003 (Table 4). It appeared that the population declined substantially when harvest rates exceeded 15% of the prehunt population. Harvests have exceeded that level during 5 years between 1996 and 2002. As a result, the estimates of statewide fall otter population in 2002-2005 were at, or slightly below, the population goal of "a minimum of 13,000 otters in the State". The population model suggests that lower harvest rates during 2003-05 (10-12% of the fall population) should allow for slight growth of the population.

The WDNR Furbearer Advisory Committee recommended a harvest goal of 1,400 otters for the 2006-07 trapping season. This includes 700 otters in the North Zone, 420 in the Central Zone,

and 280 in the South Zone. The population model suggests that that level of harvest should result in a slight increase in the statewide population.

### **Aerial Survey**

All 23 transects in the North otter management zone were completed in 2005 (Table 5). However, due to poor snow and ice conditions, only 19 transects were completed in the Central Zone and 13 transects were completed in the South Zone. Three hundred two stream and river crossings were examined in the North Zone, 220 in the Central Zone, and 171 in the South Zone. Otter tracks were detected at 14%, 7% and 2% of the stream and river crossings in the North, Central, and South zones, respectively. Track detection rates were lower than in any prior year of the survey. Whether this was due to the poor snow and ice conditions and reduced ability to detect otters or reduced population levels is unclear at this time.

### **Acknowledgements**

We thank Pat Beringer, John Nelson, Brian Glenzinski and Steve Easterly for coordinating aerial otter surveys in their regions. Additional observers were Dave Matheys, Heath Van Handel, and Joe Sprenger. We also thank the pilots, Mike Weinfurter, John Jorgensen, Bob Clark, John Bronson, Dan Cardinal and Larry Waskow, for flying the aerial otter transects and acting as additional observers.

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**Table 1.** *Percentage of male otters harvested in Wisconsin in age class, 1979-2002.*

[illegible]

**Table 2.** *Percentage of female otters harvested in Wisconsin in age class, 1979-2002.*

[illegible]

**Table 3.** *Reproductive data from female otters collected in Wisconsin.*

Age Class	Trapping Seasons				All Seasons
	1979-82	1994-95	1998-99	2001-02	
Yearlings (Age Class 1)					
Number examined	9	94	82	94	279
Number with corpora lutea	1	9	38	41	89
Mean number of corpora lutea	1.0	1.8	1.9	1.8	1.7
Percent pregnant	11	10	46	44	32
Number with embryos	0	0	0	2	2
Mean number of embryos				2.0	2.0
Adults (Age Class 2+)					
Number examined	53	158	117	140	468
Number with corpora lutea	44	99	102	104	349
Mean number of corpora lutea	2.3	2.2	2.3	2.1	2.2
Percent pregnant	83	63	87	74	75
Number with embryos	14	0	16	10	40
Mean number of embryos	2.4		2.4	2.1	2.3

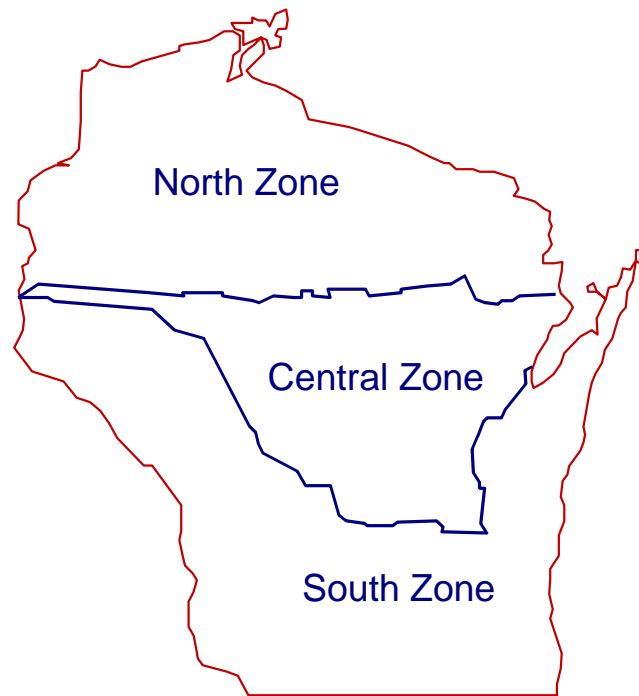
**Table 4.** *Wisconsin otter population estimates and harvests, 1982-2006.*

Year	Preharvest Population <sup>a</sup>	Harvest	Harvest Rate (%)
1982-83	12,580	960	8
1983-84	12,810	995	8
1984-85	13,150	1,213	9
1985-86	13,200	960	7
1986-87	13,600	1,588	12
1987-88	13,350	1,724	13
1988-89	12,970	1,140	9
1989-90	13,250	1,294	10
1990-91	13,350	818	6
1991-92	14,070	883	6
1992-93	14,740	1,060	7
1993-94	15,300	1,212	8
1994-95	15,750	1,900	12
1995-96	15,460	1,599	10
1996-97	15,570	2,521	16
1997-98	14,890	2,809	19
1998-99	13,960	1,631	12
1999-00	14,210	2,278	16
2000-01	13,760	1,945	14
2001-02	13,720	2,701	20
2002-03	12,840	2,096	16
2003-04	12,530	1,544	12
2004-05	12,600	1,275	10
2005-06	12,970	1,480	11
2006-07	13,140	---	---

<sup>a</sup>Wisconsin's otter population goal is a preharvest minimum of 13,000 animals.

**Table 5.** *Results from aerial otter surveys conducted in 2001-2006.*

Otter Management Zone	2001	2002	2003	2004	2005	2006
North						
No. Transects Surveyed	18	23	23	23	23	23
No. Stream/River Crossings	180	257	241	280	241	302
% of Crossings With Otter Tracks	17	25	19	19	23	14
SE (%)	4.2	4.1	3.2	2.7	3.2	2.5
Central						
No. Transects Surveyed	0	14	23	11	23	19
No. Stream/River Crossings		152	224	115	210	220
% of Crossings With Otter Tracks		29	14	14	15	7
SE (%)		4.0	2.5	4.3	3.3	2.2
South						
No. Transects Surveyed	0	5	23	21	23	13
No. Stream/River Crossings		73	245	262	267	171
% of Crossings With Otter Tracks		4	7	4	6	2
SE (%)		2.1	2.1	3.1	2.0	1



**Figure 1.** *Wisconsin's Otter Management Zones, 2005.*

